



# User-centred app design for speech sound disorders interventions with tablet computers

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**Abstract** Traditional speech and language pathology practice (SLPP) faces challenges delivering effective and timely therapy due to long waiting lists, the need for regular practice outside the clinic and a lack of children's motivation to engage in persistent practice. Technology has untapped potential to address these issues and improve SLPP. This paper describes the design of a tablet app for delivering technology-enhanced therapy for children with speech sound disorders and investigates the impact of the use of apps on SLPP. The initial design was informed by a nation-wide survey of speech-language pathologists (SLPs). The quantitative analysis disclosed that even though SLPs positively perceive mobile technology, they do not currently fully exploit it in their practice due to a lack of apps in their native language and the limited usefulness of apps in foreign

languages. Using a user-centred design process, a multidisciplinary team created three prototypes and a final version of an app that has been tested in real therapeutic sessions during everyday practice and informed by feedback from SLPs and children. The observation analysis is presented based on an adaptation of Koole's FRAME model. The qualitative findings indicate that SLPs identify mobile apps as enabling greater mobility, allowing new therapeutic approaches, creating possibilities for practice outside the therapeutic setting and increasing children's motivation, supporting greater persistence to practise in the context of the therapy.

**Keywords** Speech-language pathology · Speech sound disorders · Children · User-centred design · Tablet game

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## 1 Introduction

As the number of children requiring support from speech and language pathologists (SLPs) increases, there is a growing need for new approaches to facilitate effective and timely therapy. During the 2015/2016 school year, 11.7% of Slovenian schoolchildren were identified as having speech and language disorders [1] requiring additional forms of support (e.g. professional support and teaching method adaptations).

Speech sound disorders (SSDs), which are among the most common communication disorders observed in children, constitute a large portion of SLPs' caseload [2]. An SSD is 'a significant delay in the acquisition of articulate speech sounds' [3, p. 1294].

In Slovenia, help for children with SSDs is organised in health centres, centres for hearing and speech, schools and kindergartens. Interventions are led by an SLP and are typically provided individually for each child. Parents are